

Thermal Mapping Airborne Simulator for Small Satellite Sensor, Phase II

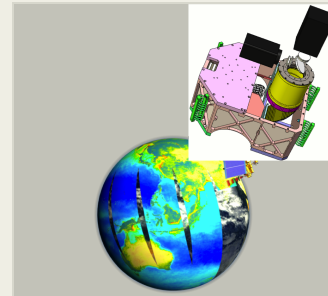
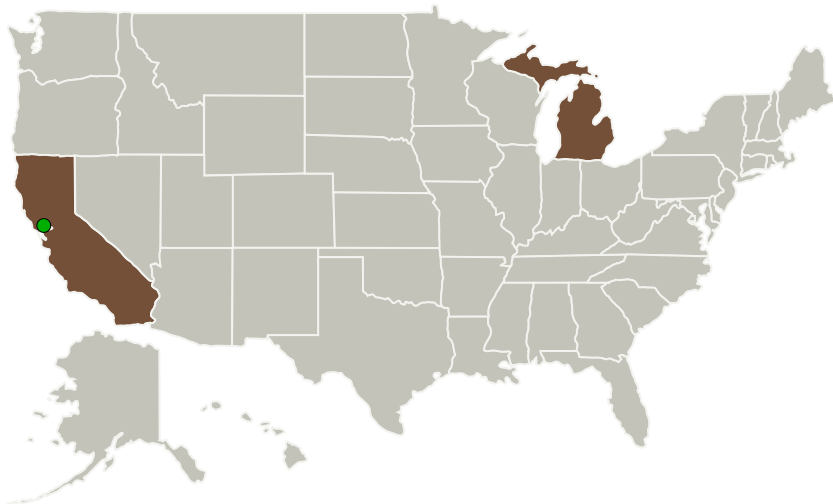
Completed Technology Project (2013 - 2016)



Project Introduction

A high performance, inexpensive, airborne simulator that will serve as the prototype for a small satellite based imaging system capable of mapping thermal anomalies on the surface of the earth with a high revisit rate and high spatial resolution is proposed. The Thermal Mapping Airborne Simulator for Small Satellite Sensor (TMAS) will be developed to a TRL 8 in the Phase II and the space-qualified system will be developed and built in Phase III. The proposed system will deliver high spatial resolution (133 urad), high signal to noise performance, three spectral bands, and onboard processing to extract the information of greatest value, orthorectify the imagery, and reduce the size of the data for transmission. This sensor system is designed to fit within the size, weight, and power (SWaP) envelopes of typical remote sensing aircraft and small satellites. The proposed design incorporates a step stare scanning mirror, a two band (LWIR 8 to 9 um and MWIR 4 – 5 um) Quantum Well Infrared Photodetector (QWIP), a short wave IR sensor (1.6 um), and an FPGA based image processing and orthorectification processing module.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Xiomas Technologies	Lead Organization	Industry	Ypsilanti, Michigan
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Michigan

Project Transitions

July 2013: Project Start

July 2016: Closed out

Closeout Summary: Thermal Mapping Airborne Simulator for Small Satellite Sensor, Phase II Project Image

Closeout Documentation:

- Final Summary Chart Image(<https://techport.nasa.gov/file/140686>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Xiomas Technologies

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

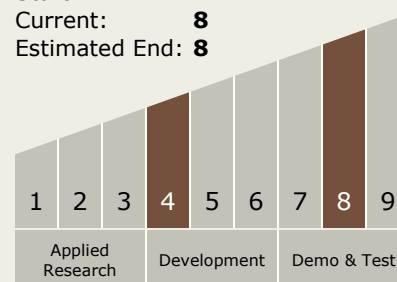
Carlos Torrez

Principal Investigator:

John M Green

Technology Maturity (TRL)

Start: 4
Current: 8
Estimated End: 8

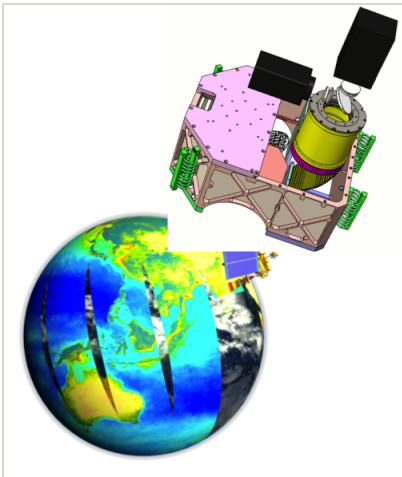


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Images



Briefing Chart Image

Thermal Mapping Airborne
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(<https://techport.nasa.gov/image/126861>)

Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.6 Cryogenic / Thermal

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System